

In the Claims:

Claims 1 to 16 (Canceled).

1 17. (New) An acceleration sensor arrangement comprising:

2 a frame;

3 plural inertial masses; and

4 a respective set of two torsion spring elements  
5 respectively suspending each respective one of said  
6 inertial masses from said frame, whereby said two torsion  
7 spring elements of each said respective set are aligned  
8 with one another on a respective reference plane parallel  
9 to a surface of said respective inertial mass when said  
10 respective inertial mass is at rest without being  
11 deflected, so that said two torsion spring elements form a  
12 respective torsional pivot axis about which said respective  
13 inertial mass is pivotable;

14 wherein each said respective inertial mass is  
15 respectively suspended asymmetrically by said respective  
16 set of two torsion spring elements associated therewith, so  
17 that a respective center of gravity of said respective  
18 inertial mass is offset by a first offset distance (b) from  
19 said reference plane and is offset by a second offset  
20 distance (a) from a respective second plane that extends  
21 perpendicular to said reference plane along said respective  
22 torsional pivot axis of said respective inertial mass; and

23            wherein said respective inertial mass is respectively  
24            configured and arranged, and an offset angle ( $\phi$ ) is defined  
25            so that the trigonometric tangent function of said offset  
26            angle is given by said first offset distance divided by  
27            said second offset distance ( $\tan \phi = b/a$ ), and said offset  
28            angle ( $\phi$ ) is greater than 20 degrees.

1    18.    (New) The acceleration sensor arrangement according to  
2            claim 17, wherein said plural inertial masses include at  
3            least three of said inertial masses that are each  
4            configured identically to one another and that are arranged  
5            with one another in a rectangular pattern.

1    19.    (New) The acceleration sensor arrangement according to  
2            claim 17, further comprising a first cover plate arranged  
3            on a first side of said frame spaced by a first gap from  
4            said inertial masses.

1    20.    (New) The acceleration sensor arrangement according to  
2            claim 19, further comprising a second cover plate arranged  
3            on a second side of said frame opposite said first side and  
4            spaced by a second gap from said inertial masses.

1    21.    (New) The acceleration sensor arrangement according to  
2            claim 19, further comprising at least one conductive area  
3            respectively arranged on said first cover plate, located  
4            opposite and facing toward each said respective inertial

5 mass across said first gap, to form a variable capacitance  
6 between said at least one conductive area and said  
7 respective inertial mass dependent on a spacing distance  
8 between said at least one conductive area and said  
9 respective inertial mass across said first gap.

1 22. (New) The acceleration sensor arrangement according to  
2 claim 17, characterized in that a measurement of a  
3 deflection of each said respective inertial mass (3a-d) is  
4 enabled by a differential capacitive measurement  
5 arrangement.

1 23. (New) The acceleration sensor arrangement according to  
2 claim 17, further comprising a lower cover disk (7) and an  
3 upper cover disk (9) with said frame received therebetween  
4 for sealing and for protection against environmental  
5 influences.

1 24. (New) The acceleration sensor arrangement according to  
2 claim 23, further comprising metallized surfaces (10a-d)  
3 that are isolated from one another and are structured on  
4 the upper cover disk (9) close to the respective torsional  
5 pivot axis defined by the respective torsion spring element  
6 (4a-h) for enabling a differential capacitive measurement  
7 of a deflection of each said respective inertial mass.

1 25. (New) The acceleration sensor arrangement according to  
2 claim 24, wherein the metallized surfaces (10a-d) are  
3 arranged symmetrically to the torsional pivot axis defined  
4 by the respective torsion spring element (4a-h).

1 26. (New) The acceleration sensor arrangement according to  
2 claim 17, further comprising a deflection measurement  
3 device including a capacitive arrangement arranged so as to  
4 sense a deflection of each one of said inertial masses  
5 about said respective torsional pivot axes.

1 27. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein said inertial masses are arranged so that  
3 said acceleration sensor arrangement is sensitive to  
4 acceleration forces along three orthogonal force axes.

1 28. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein said torsional pivot axes of said  
3 inertial masses are respectively oriented offset from one  
4 another by integer multiples of 90 degrees.

1 29. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein said respective reference planes of said  
3 inertial masses all lie on one common reference plane when  
4 said acceleration sensor arrangement is at rest without  
5 said inertial masses being deflected.

1 30. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein each said respective inertial mass is  
3 configured and arranged about said torsional pivot axis  
4 thereof to have a respective main sensitivity axis  
5 perpendicular to said reference plane thereof.

1 31. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein said offset angle ( $\phi$ ) is  $45^\circ$ .

1 32. (New) The acceleration sensor arrangement according to  
2 claim 17, wherein said frame includes an outer frame  
3 bounding an outer perimeter of said acceleration sensor  
4 arrangement and an inner divider frame that divides an  
5 inner space of said outer frame into plural cells in which  
6 said inertial masses are respectively received, and each  
7 said respective set of two torsion spring elements includes  
8 an outer torsion spring element connecting said respective  
9 inertial mass to said outer frame and an inner torsion  
10 spring element connecting said respective inertial mass to  
11 said inner divider frame.

1 33. (New) An acceleration sensor arrangement comprising:  
2 a frame;  
3 plural inertial masses; and  
4 a respective set of two torsion spring elements  
5 respectively suspending each respective one of said  
6 inertial masses from said frame, whereby said two torsion

7 spring elements of each said respective set are aligned  
8 with one another to form a respective torsional pivot axis  
9 about which said respective inertial mass is pivotable;

10 wherein each respective one of said inertial masses is  
11 respectively suspended asymmetrically by said respective  
12 set of two torsion spring elements associated therewith, so  
13 that a respective center of gravity of said respective  
14 inertial mass is offset from said respective torsional  
15 pivot axis of said respective inertial mass in two  
16 orthogonal directions; and

17 wherein said frame includes an outer frame bounding an  
18 outer perimeter of said acceleration sensor arrangement and  
19 an inner divider frame that divides an inner space of said  
20 outer frame into plural cells in which said inertial masses  
21 are respectively received, and each said respective set of  
22 two torsion spring elements includes an outer torsion  
23 spring element connecting said respective inertial mass to  
24 said outer frame and an inner torsion spring element  
25 connecting said respective inertial mass to said inner  
26 divider frame.

[RESPONSE CONTINUES ON NEXT PAGE]